

SAME National Conference Keynote Address
Opryland Convention Center, Nashville, TN
30 May 2001

Acknowledgments

Well I'll tell you that our national conference is off to a great start this year. I really enjoyed the golf tournament yesterday, and I'm looking forward to a productive week.

There are a number of people that I would like to recognize:

Air Force: Major General Earnest Robbins

Navy: Rear Admiral Michael Johnson

Coast Guard: Rear Admiral Robert Silva

I would like to extend a special welcome to Rear Admiral Robert Williams, representing the U.S. Public Health Service, and joining the ranks of the SAME Service Chief's for the first time this year.

I want to acknowledge a number of people who were instrumental in organizing the conference.

I would like to extend a personal commendation to:

Conference co-chairs - Jack Wood and LTC Pete Taylor

Conference Committee

Nashville SAME Chapter and Volunteers

Staff of the Corps Nashville District

All of you have done a yeoman's job in putting this conference together, and I know that it's not easy to sponsor an event of this size.

For just a second, can we get all of the conference committee, the volunteers, everyone who has been involved in putting this event together to stand for a moment.

I think they deserve a round of applause.

Introduction

Today I'd like to talk with you about engineering leadership, and the role that the engineering community needs to take on in public life. Engineers are change agents, and our fundamental goal is to improve the human condition. Our nation stands at a new crossroads and the engineering community must take on a larger leadership role. The future well being and competitiveness of our society depends on you and your leadership in two vitally important areas: one, how effectively we implement new technology, and two, the condition of our national infrastructure. Among our ranks are the people who have the greatest capability to make informed judgements on how we use the technology that is driving our economy and the infrastructure that supports it. Science and technology will always shape the future because technical skills are necessary for any kind of progress. But technical competency is not enough. In order to have a positive influence on the future, we must also think strategically. We must concern ourselves not only with the high-tech tools of the future, but also with the far-reaching

impacts and consequences of technology driven change in our nation.

Perspective

We live in a world increasingly shaped by how we use emerging technologies, but more often than not, technology experts are not included in policy determinations involving use of technology. We didn't get here over night. Less than one percent of the current Members of the Senate and House of Representatives have an engineering background, and there are none in the Cabinet. Yet nearly 33 percent of the budgetary decisions made by Congress usually deal with technology - defense, energy, transportation, health care, and similar technology procurements. At the state level there are two sitting governors with engineering degrees and one with a background in the construction industry. We can do better than this.

Engineers frequently contribute little to economic and policy decisions by industry or government even when the decisions are based on technology factors. From this engineer's perspective we need policy makers who can appreciate the economic impacts of our nation's deteriorating infrastructure. I'm sure that all of you are aware of the infrastructure report card that the American Society for Civil Engineers produces. This year they gave our nation's infrastructure a D+. When you have rolling blackouts in California and crumbling bridges in Milwaukee, you start to get a hint that there's work that needs to be done.

The solutions to these problems involve more than money, but as with most things in life, you get what you pay for. To remedy America's current and near term problems, ASCE estimates that we need a \$1.3 trillion investment over the next five years and calls for a renewed partnership between citizens, local, state and federal governments, and the private sector.

This is the world as we know it today. Where do we begin if we are to change the way that engineers see themselves, and interface with government and the private sector. I think that one important area to consider is engineering education.

Engineering Education

It is sometimes said that engineers are hired out of college for their technical ability, promoted for their management potential, and subsequently fired because of their lack of communication skills.

Much has been said about the character and content of engineering training at the college level. There is a valid debate on the question of whether engineering education should be purely technical, or whether it should produce graduates that are more broadly trained. Regardless of where you stand on these questions, our nation needs engineers that have communications, management, and leadership skills in addition to technical expertise. Some part of the training for these skills needs to begin during the college years. Now everybody can't go to West Point, but the model used by this institution combining technical training with subjects like philosophy, political science, and international relations is something that everyone could learn from.

Beyond that, we also have a problem regarding the perception of our profession at the elementary and secondary school level. If you were to speak to a group of high school students today, you might find that engineers are thought of as people who drive locomotives, operate

boilers in apartment buildings, or build highways and bridges. Very few kids, unless they were one of my sons or perhaps your daughter, would tell you that an engineer is a practical scientist that is trained to design things. And I doubt if any high school student would tell you that engineers should play a role in running a government department.

What can we do to change this?

Our society has been active in educational outreach for many years. Our objectives include facilitating programs to promote engineering education and an appreciation of military engineering, as well as participating in the development of a strong engineering education system in U.S. colleges and universities. It is safe to say that we have touched literally thousands of students at all age levels through the activities of our local posts and we need to continue this work in the future.

Why is this important? Over the long term, if we want to change the view that we have of ourselves, we must emphasize educational outreach at every level. More importantly, whenever we speak to students we must emphasize the importance of leadership and communication skills.

Engineering Leadership

Leadership is not inherited and it is not a part of personality. It can be learned, but leadership skills are not acquired equally. Leaders are distinguished from others by the way they behave, by their appearance, and by the way they act. Leaders must have vision to look into the future and project results. They have depth of knowledge and the humility to admit the limits of their abilities. Leaders continually strive to increase their knowledge and competence. They believe in others and see their work as a mission. They have a sense of commitment and duty backed by personal, unselfish responsibility toward achievement of a defined objective. They are willing to risk professional and social reputation by sticking to what they think is right, and they are willing to take responsibility for the consequences.

This is nothing new to the men and women of this society. As military engineers, both those who wear the uniform and our civilian colleagues, we know the responsibility and the demands of leadership.

But are there any unique aspects of engineering leadership? We deal with complicated technical matters, but we must be able to communicate in terms that can be understood by non-technical people. Engineering leaders must show creativity, imagination, and an ability to present a vision of how to implement their ideas. A leader's vision must be possible and acceptable to reasonable people who recognize it as a creative solution that is easily understood. Engineering leaders who are involved in policy determinations must be able to communicate their ideas in simple, convincing, and logical terms. They must convey the integrity of their vision by showing its benefits, and convince others that the vision is worthwhile.

The Road Ahead

We have to ask ourselves if the engineering community today is meeting the challenge to take leadership roles in the general society. What can we do to change the reality of the roles that we play in society? And most importantly, what can this society do to create a meaningful impact

on these issues?

As military engineers, we are uniquely positioned to be able to use the leadership training that is a daily part of our lives to influence the next generation of engineers. It is not enough to be technically proficient in an individual area. In all of our educational outreach efforts we must carry the message that communications skills and leadership competencies are an integral aspect of the engineering profession. As a complement to engineering technical skills, we must prepare today's engineering students to play a larger role in this nation.

In the Army Corps of Engineers we have both military and civilian leaders, and we spend a lot of time and resources to develop and foster leadership qualities in both of these groups. In the Army, we train our people from the moment they join the Army, and throughout their career. It's a continuous process with specific milestones and goals. I believe the principles of leadership development are the greatest strength of our military, and I think these principles can be adapted and applied to engineering education and other business activities.

And for those in the private sector who currently practice our profession, you must become more involved in the political process and the policy debates of our time. Each of us must ask ourselves the question, "if not me, then who?" Technology and infrastructure issues are at the forefront from the local level to the national arena. We need more decision makers with a technical background to provide informed, articulate, and ethical leadership for the tough calls that we face as a nation. From local school boards, to the state house, to the halls of Congress - we have a perspective that needs to be heard. We need more engineers to get involved.

Historical Anecdote/Conclusion

I would like to finish with a bit of historical perspective. In 1895 there was a young Stanford graduate who took a job as a typist in an engineering office when there were no engineering positions open. He was soon hired by a mining firm and was off to work in the gold fields of Australia. He later became a partner in that firm, and in 1909 he formed his own group of consulting engineers. Along the way he traveled world-wide and became known as "the doctor of sick mines." That man was Herbert Hoover, who would become the 31st President of the United States. Prior to being elected President, he served as a member of the Supreme Economic Council and head of the American Relief Administration at the end of World War I. He also served as the Secretary of Commerce under two presidents.

President Hoover answered the question, "if not me, then who." Our nation will always remember his lifetime of public service. How will we answer that same question today?

I say - Essayons!